

The Atmospheric Release Advisory Capability (ARAC) Modeling System

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ABSTRACT: For over 20 years the Atmospheric Release Advisory Capability (ARAC) program at Lawrence Livermore National Laboratory (LLNL) has responded to disasters involving major hazardous releases into the atmosphere. ARAC is a U.S. federal resource which has assisted international, federal and state agencies. Our staff and system can readily simulate the health and safety consequences from a variety of atmospheric releases including accidents triggered from earthquakes at nuclear facilities or chemical industries. We also have determined the transport, dispersion, and ground deposition of volcanic ash clouds including forecasting safe corridors for aviation. The program produces timely consequence analyses anywhere in the world by employing extensive on-line source term, topographic and geographic databases, accessing real-time meteorological data, and running a complex 3-D numerical dispersion model. ARAC can deliver plots to emergency response managers in less than 15 minutes at sites with predetermined default scenarios. The automated system has proven to be a useful training tool for emergency preparedness exercises. The ARAC Center is staffed to operate 24-hours/day on an on-call basis in Livermore, California.

This work was performed under the auspices of the US. Department of Energy under contract no. W-7405-Eng-48.